

IN THE CLAIMS

The following listing of the claims, which are provided in accordance with 37 C.F.R. § 1.121, replace all previous versions and listings of the claims in relation to the present patent application.

Listing of the Claims

1. (Currently amended) A seal assembly for closing off an annular space between first and second nested bodies and supported by at least one of said first and second bodies, comprising:

first and second nested bodies defining an annular space therebetween; and
a seal supported by one of said bodies, said seal further comprising:

an annularly shaped body having an upper and a lower end;

at least one backup ring mounted on one of said ends of said body and having a relaxed dimension greater than the annular space between said first and second bodies so that opposed ends on said backup ring must be compressed to be inserted in the annular gap, said backup ring further comprising a bend between said opposed ends to store a force created by insertion of said backup ring into the annular space and apply said force on said opposed ends against said first and second bodies; and

said ends of the backup ring loop toward each other to create a gripping engagement with said body under a residual force upon initial mounting to said body.

2. (Previously presented) The assembly of claim 1, wherein:

said body urges said ends of the backup ring away from each other.

3. Cancelled

4. Cancelled

5. (Currently amended) A seal assembly for closing off an annular space between a first and second body and supported by at least one of said first and second bodies, comprising:

an annularly shaped body having an upper and a lower end and a longitudinal axis; and

at least one backup ring mounted on one of said ends of said body and having a relaxed dimension greater than the annular space between said first and second bodies so that opposed ends on said backup ring must be compressed to be inserted in the annular space gap, said backup ring further comprising a bend between said opposed ends to store a force created by insertion of said backup ring into the annular space and apply said force on said opposed ends against said first and second bodies;

said body comprises at least one first ring in a first groove, said first groove having a bottom and a first circumference at said bottom;

the circumference of said first ring at a location nearest said first circumference of said first groove differs before mounting from said first circumference of said first groove so as to apply a net radial force to said body in a direction substantially perpendicular to said longitudinal axis.

6. (Currently amended) The assembly of claim 5, wherein:

said first ring, when placed in contact with one of said first and second bodies, deforms said first groove in a manner so as to force said ends of said backup ring away from each other.

7. (Currently amended) The assembly of claim 5, wherein:

said first ring circumference is in the range of at least about 8-15% ~~greater than~~ different from said groove in which it is installed.

8. (Original) The assembly of claim 5, wherein:

said first ring is made from a material having a Durometer hardness of about 56-85.

9. (Original) The assembly of claim 5, wherein:

said first ring contacts the one of said first and second bodies with the smaller dimension.

10. (Previously presented) The assembly of claim 5, wherein:

said first ring contacts the one of said first and second bodies with the larger dimension;

said first ring has a circumference that is shorter than the circumference of said first groove.

11. (Original) The assembly of claim 10, wherein:

the circumference of said first ring in the range of about 6-20% shorter than the circumference of said first groove.

12. (Currently amended) The assembly of claim 5, wherein:

said first ring contacts the one of said first and second bodies with the larger dimension;

said first ring, when said body is installed in the annular space gap, is in an interference fit with said one of said first and second bodies to an extent of at least about 20% of the cross-sectional diameter of said first ring.

13. (Original) The assembly of claim 12, wherein:

said first ring is made from a material having a Durometer hardness of about 56-85.

14. (Currently amended) The assembly of claim 5, wherein:

said body further comprises at least one second ring in a second groove disposed on the opposite side of said body from said first ring;

said second ring contacts the one of said first and second bodies with the larger dimension;

said second ring, when said body is installed in the annular space gap, is in an interference fit with said one of said first and second bodies to an extent of at least about 20% of the cross-sectional diameter of said second ring.

15. (Original) The assembly of claim 14, wherein:

said first ring is made from a material having a Durometer hardness of about 56-85.

16.(Original) The assembly of claim 6, wherein:

said body has a longitudinal axis and said deformation results in said first ring deforming into an undulating wave pattern in an axial direction parallel to said longitudinal axis.

17. (Original) The assembly of claim 5, wherein:

said body further comprises at least one second ring in a second groove disposed on the opposite side of said body from said first ring;

said second ring contacts the one of said first and second bodies with the larger dimension;

said second ring has a circumference that is shorter than the circumference of said first groove.

18. (Original) The assembly of claim 17, wherein:

the circumference of said second ring in the range of about 6-20% shorter than the circumference of said first groove.

19. (Currently amended) A seal assembly for closing off an annular space between a first and second body and supported by at least one of said first and second bodies, comprising:

an annularly shaped body having an upper and a lower end and a longitudinal axis;

said body comprises at least one first ring in a first groove, said first groove having a bottom and a first circumference at said bottom;

the circumference of said first ring at a location nearest said first circumference of said first groove differs before mounting from said first circumference of said first groove so as to apply a net radial force to said body in a direction substantially perpendicular to said longitudinal axis.

20. (Currently amended) The assembly of claim 19, wherein:

said first ring circumference is in the range of at least about 8-15% ~~greater than~~ different from said groove in which it is installed.

21. (Original) The assembly of claim 20, wherein:

said body further comprises at least one second ring in a second groove disposed on the opposite side of said body from said first ring;

said second ring, when said body is installed in the annular gap, is in an interference fit with said one of said first and second bodies to an extent of at least about 20% of the cross-sectional diameter of said second ring.

22. (Original) The assembly of claim 21, wherein:

said first and second rings are made from a material having a Durometer hardness of about 56-85.

23. (Original) The assembly of claim 22, further comprising:

at least one backup ring mounted on one of said ends of said body and having a relaxed dimension greater than the annular gap between said first and second bodies so that opposed ends on said backup ring must be compressed to be inserted in the annular gap, said backup ring further comprising a bend between said opposed ends to store a force created by insertion of said backup ring into the annular space and apply said force on said opposed ends against said first and second bodies.

24. (Original) The assembly of claim 23, wherein:

said first ring, when placed in contact with one of said first and second bodies, deforms in a manner so as to force said ends of said backup ring away from each other.

25. (Original) The assembly of claim 24, wherein:

said first ring contacts the one of said first and second bodies with the smaller dimension;

said body has a longitudinal axis and said deformation results in said first ring deforming into an undulating wave pattern in an axial direction parallel to said longitudinal axis.

26. (Previously presented) The assembly of claim 5, wherein:

said first ring is softer than said body.

27. (Previously presented) The assembly of claim 19, wherein:

said first ring is softer than said body.

28. (New) A seal assembly for sealing an annular space between first and second bodies, comprising:

an annularly shaped body having first and second ends, and at least one notched portion disposed between the first and second ends;

at least one backup ring disposed on one of the first or second ends, the backup ring comprising:

a pair of loop ends extending toward the annularly shaped body and configured to secure the backup ring to the annularly shaped body;

an inflected portion located between the loop ends and in abutment with the annularly shaped body, wherein the inflected portion facilitates elastic deformation of the backup ring; and

a sealing ring disposed in the notched portion of the annular body and configured to provide a biasing force in a radially inward direction with respect to the annular body.